

BRIEF COMMUNICATION

GASTRO-INTESTINAL PARASITES OF FERAL CATS
IN THE NORTHERN TERRITORY.

The feral cat, *Felis catus*, is well established as a predator in Australia and feeds on insects, fish, amphibians, birds, reptiles and native and introduced mammals¹. Several surveys of the gastro-intestinal parasites of feral cats have been carried out in south-eastern Australia^{2,3,4}, the species and prevalence of the parasites encountered varying between states, depending on available food sources and climate. In this study we present information on the gastro-intestinal parasites recovered from feral cats collected from the Northern Territory, a region from which only limited data currently exist.

Staff from the Parks and Wildlife Commission of the Northern Territory trapped and/or shot 188 feral cats for this study between 1991 and 1993. Twenty-two cats originated from Watarrka (Kings Canyon) National Park, south-west of Alice Springs (24° 20' and 25° 20' S, 130° 50' to 132° 45' E), 25 from an area north of the MacDonnell Ranges from Glen Helen Gorge to Yambah and Alcoota Stations (22° 50' to 23° 45' S, 133° 30' to 134° 55' E), 45 near Mount Davidson in the Tanami Desert Wildlife Sanctuary, north-west of Alice Springs (20° 20' to 20° 55' S, 130° 25' to 131° 55' E), 8 in the Davenport Ranges from Murray Downs Station via Barrow Creek (20° 50' to 21° 00' S, 134° 10' to 134° 25' E), 51 from Lake Nash (Alpurrrulalan) (20° 20' to 21° 10' S, 137° 50' to 138° 10' E) on the Barkly Tablelands, 18 from the northern Barkly Tablelands (17° 50' to 19° 45' S, 134° 00' to 137° 00' E) and 19 from Marrakai to Katherine (12° 35' to 14° 30' S, 131° 20' to 142° 20' E) south-east of Darwin.

The stomachs of the cats were opened so that undigested contents could be identified and then the entire gastro-intestinal tracts were preserved in 10% formalin or 70% ethanol. The preserved material was transported to Adelaide

where parasites were removed and counted using a dissecting microscope and later, after they had been cleared in lactophenol, identified employing a compound microscope. When present, rectal samples were examined for protozoa using centrifugal flotation in saturated MgSO₄ solution.

Many of the helminths found (Table 1) have been reported previously in surveys of feral cats from New South Wales, Victoria and Tasmania (*Ancylostoma tubaeforme*, *Cyathostepura dasyuridis*, *Toxocara cati*, *Spirumetra erinacei*, *Taenia taeniaciformis*) although there are significant differences in prevalence between states. The principal difference between this survey and previous ones is the very low prevalence of *T. cati* in the Northern Territory. Only 9.0% of the cats examined had no parasites.

Acanthocephalan parasites occurring in feral cat populations elsewhere have been referred to as *Oncicola* sp.^{2,3,4}. Schmidt⁵ identified the species as *Oncicola pomatosomi*. Both the dingi, *Canis familiaris dingi*, and feral cat act as definitive hosts, with larval stages occurring under the skin of a variety of passerine birds⁶. *Oncicola pomatosomi* was the most commonly detected parasite in this study and was also present in large numbers in many of the cats. Although worms were found with their probosces deeply embedded into the intestinal mucosa, the associated pathological reactions were limited to an inflammatory infiltrate around the probosces, detected when histological sections were examined. This parasite was not recovered from 19 cats in the area south of Darwin but was present in animals from all other areas of the Northern Territory. The large numbers of *O. pomatosomi* found in cats suggests that birds constitute a significant item of their diet, although a lack of data on abundance of this parasite in paratenic hosts prevents more detailed conclusions from being drawn.

Physaloptera praeputialis and *Abbreviata hustaspicula* have been reported from feral cats and dogs from the Northern Territory⁷ on a single occasion. The evidence here confirms that *P. praeputialis* is a relatively common parasite of feral cats in central Australia. *Abbreviata hustaspicula* is normally a parasite of varanid lizards⁸ but, apparently, will develop also in the stomach of cats. Ryan² found a '*Physaloptera*' sp. present in cats in New South Wales but at that time dismissed it as an incidental parasite. It may have been *A. hustaspicula* but the lack of deposited specimens makes it impossible to confirm this hypothesis.

Ancylostoma tubaeforme is generally considered to be the common hookworm of domestic cats⁹ but records to date suggest that it is uncommon in feral cats except in those collected in the vicinity of Sydney². *A. tubaeforme* was widely distributed in the Northern Territory, occurring most frequently in cats from the Kings Canyon area, the MacDonnell Ranges and Murray Downs Station. Infections consisted of small numbers of worms (maximum number = 31). A single cat was found infected with *A. caninum*, a parasite more commonly found in canids in Northern Australia¹¹; this cat harboured only five adult worms.

An immature specimen of *Gnathostoma spinigerum* was

TABLE 1. Prevalence of intestinal helminth parasites found in 188 feral cats from the Northern Territory.

Parasite	Prevalence (%)	Abundance (mean)
Acanthocephala		
<i>Oncicola pomatosomi</i>	65.4	1–999 (130)
Nematoda		
<i>Abbreviata hustaspicula</i>	4.3	1–46 (12)
<i>Ancylostoma caninum</i>	0.5	5
<i>Ancylostoma tubaeforme</i>	12.8	1–31 (4)
<i>Cyathostepura dasyuridis</i>	4.3	1–13 (5)
<i>Physaloptera praeputialis</i>	40.4	1–51 (8)
<i>Toxocara cati</i>	1.0	3–15 (9)
Cestoda		
<i>Spirumetra erinacea</i>	14.4	1–25 (6)
<i>Taenia taeniaciformis</i>	47.9	1–79 (7)

found in the stomach of a cat collected in Kings Canyon, *Gi. spinigerum* has been found sporadically in feral cats in Australia¹² but appears to be uncommon.

The identity of *Taenia taeniaeformis* was confirmed by counting and measuring the large and small rostellar hooks from 13 cestode scoleces and comparing the data with those provided by Verster¹⁰. *Sprombeira erinacei* was detected in all of the cats collected in the area to the south of Darwin but in only eight cats from the other areas of the Northern Territory. This may be due to the fact that the first intermediate host of this parasite is a fresh-water crustacean of the genus *Cyclops*¹¹ and the pools of fresh water necessary for its transmission are less frequent in arid areas. Parasites such as *Dipylidium caninum*, *Uncinaria stenocephala* and *Cylicospirura felinus*, present in other surveys, were not found.

Faecal examinations revealed two species of coccidia, *Isoospora felis* in 9.6% of 146 cats and *I. rivolta* in 6.9%. Both are common parasites of cats and can cause disease in younger animals. The majority of the cats examined were adults and this could explain the low prevalence of coccidian infections (including the absence of *Toxoplasma gondii*) in this and other surveys⁴.

Additional nematodes, *Echinonema cinctum*, *Rictularia carstairi* and *Wuellerstorffia stenoti* were rarely found and their presence was presumably the result of the ingestion of native mammals and reptiles which are the normal hosts of these parasites. Similarly, the ingestion of birds would explain the presence of female nematodes of *Apocrita* sp. in the stomachs of two cats. Other parasites

collected from intestinal contents and faeces but obviously related to the ingestion of rodent hosts were *Demodex* sp. and *Protergeres* sp. *Xenopsylla vexabilis*, a flea found commonly on *Rattus villosissimus* was found in the stomach of cats from the Lake Nash area and the mite, *Laelaps hupuloti*, a parasite of *Notomys* spp., was found in cats from the Tanami Desert area. Another accidental parasite recovered was *Syphacia obvelata* an oxyurid parasite in the caecum of rodents.

The information presented here identifies a greater variety of parasites occurring in feral cats in the Northern Territory than previous studies have found. It identifies *P. praeputialis* as a common parasite and demonstrates that cats are frequently infected with *A. hastaspicula*. It also confirms that the feral cat preys on native mammals, birds and reptiles. This is particularly so in the case of birds, with the large numbers of *O. pennantostomi* suggesting frequent predation.

This work was begun by Murray Barton, when employed at the Arid Zone Research Institute, Alice Springs and was conducted on material collected by the staff of the Conservation Commission of the Northern Territory, Alice Springs. We wish to thank Mr Barton and all of the individual officers who kindly collected and preserved the viscera of the cats and David Gibson for his help with the manuscript.

Representative specimens of all of the helminths collected have been deposited with the Australian Helminthological Collection, South Australian Museum. Registration numbers AHC 30181 to 30231.

¹Jones, E. (1983) "Feral Cat" p. 489 In Strahan, R. (Ed.) Complete Book of Australian Mammals" (Angus & Robertson, Australia).

²Ryan, G. E. (1976) Aust. Vet. J. **52**, 224-227.

³Coman, B. J. (1972) *Ibid.* **48**, 133-136.

⁴Gregory, G. G. & Munday, B. L. (1976) *Ibid.* **52**, 317-320.

⁵Coman, B. J., Jones, E. H. & Driesen, M. A. (1981) *Ibid.* **57**, 324-327.

⁶Schmidt, G. D. (1983) J. Parasitol. **69**(2), 397-399.

⁷Barton, M. A. & McEwan, D. R. (1993) Aust. Vet. J. **70**(7), 270.

⁸Jones, H. I. (1983) Aust. J. Zool. **31**, 285-298.

⁹Prescott, C. W. (1984) University Of Sydney, Postgraduate Foundation in Veterinary Science, Review No. 24. Parasitic Diseases of the Cat in Aust.

¹⁰Verster, A. (1969) Onderstepoort J. Vet. Res. **36**(1), 3-58.

¹¹Dunsmore, J. D. & Shaw, S. E. (1990) University of Sydney, Postgraduate Foundation in Veterinary Science, Review No. 31. Clinical Parasitology of Dogs.

¹²Beveridge, I., Presidente, P. J. A. & Arundel, J. H. (1978) Aust. Vet. J. **54**, 46.